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| 10/025,448 | 12/18/2001 | Rida M. Hamza | H16-25013 (256.115US1) | 6705 |

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| EXAMINER | |
|---|---|
| TUCKER, WESLEY J | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2623 | |

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/025,448 | HAMZA, RIDA M. | |
| | Examiner | Art Unit | |
| | Wes Tucker | 2623 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *18 December 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 December 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12-18-01 & 8-01-03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Drawings*

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the drawings submitted are not suitable for publication. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-12, 15-20, 23-30, and 32-35 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,670,965 to McKeown.

With regard to claim 1, McKeown discloses a method to warp a pixel, comprising receiving a pixel coordinate pair having an intensity value, an x-pixel coordinate, and a y-pixel coordinate (column 2, lines 30-42). McKeown discloses warping pixels obtained in a coordinate plane with color values, which are considered equivalent to intensity values.

McKeown further discloses identifying a pixel weight, the pixel weight including a product of an x-pixel weight and a y-pixel weight (column 2, lines 43-54 and Fig. 8).

McKeown further discloses using the product and the intensity value to warp the pixel coordinate pair to one or more target pixel coordinate pairs (column 2, lines 37-42).

With regard to claim 2, McKeown discloses the method of claim 1 further comprising using a warping function when identifying the pixel weight (column 2, lines 30-50).

With regard to claim 3, McKeown discloses the method of claim 1 further successively repeating each step until remaining pixel coordinate pairs are warped to remaining target pixel coordinate pairs (column 3, lines 9-25).

With regard to claim 4, McKeown discloses the method of claim 1 wherein in using the product to warp the pixel coordinate pair, one or more of the target pixel coordinate pairs represent a target pixel lattice (column 3, lines 9-25). McKeown

discloses transforming the image from the original (u, v) coordinate plane to a new (x, y) coordinate plane or a target pixel lattice.

With regard to claim 5, McKeown discloses the method of claim 1 wherein in using the product to warp the pixel coordinate pair, one or more of the target pixel coordinate pairs represent a stretched pixel coordinate pair (column 3, lines 9-25). McKeown discloses a method where holes are left in between the new pixel coordinates or lattice. This is interpreted as stretching the pixel coordinate pair.

With regard to claim 6, McKeown discloses the method of claim 1 wherein in using the product to warp the pixel coordinate pair, one or more of the target pixel coordinate pairs represent at least one of a compressed pixel coordinate pair, a translated pixel coordinate pair, and a rotated pixel coordinate pair (column 2, lines 44-60 and Figs. 1-6 and 8). McKeown discloses rotation coefficients for determining a rotation between the original and warped pixel coordinates.

With regard to claim 7, Mckeown discloses the method of claim 1, wherein in identifying the pixel weight, the pixel weight is represented as a fixed point number or floating point number (column 2, lines 30-50 and Fig. 8). McKeown discloses determining a pixel weight as a number and it is inherent that the number be represented as either fixed point or floating point. If it is not one it must be the other.

With regard to claim 8, Mckeown discloses a method to warp an image, comprising acquiring a plurality of input pixels associated with a source image (column 2, lines 30-42).

McKeown further discloses passing each of the input pixels to a warping set of executable instructions (column 2, lines 30-42).

McKeown further discloses receiving a separate scale for each of the passed input pixels (column 2, lines 43-50 and Figs. 7 and 8). McKeown discloses scaling coefficients used to warp the pixels.

McKeown further discloses weighting each of the input pixels based on the separate scales (column 2, lines 43-50 and Figs. 7 and 8). McKeown discloses using scaling factors in order to warp the pixels in a matrix shown in Fig. 8.

McKeown further discloses mapping each of the input pixels to an output lattice using the separate scales (column 3, lines 9-22). McKeown discloses transforming the image from the original (u, v) coordinate plane to a new (x, y) coordinate plane or a target pixel lattice.

With regard to claim 9, McKeown discloses the method of claim 8 further comprising producing a destination image from the mapping (column 3, lines 9-22). The pixels transformed to the new coordinates along with interpolated pixels form a new destination image.

With regard to claim 10, McKeown discloses the method of claim 9 wherein the produced destination image represents at least one of a stretched source image, a rotated source image, and a compressed source image (Figs. 1-7).

With regard to claim 11, McKeown discloses the method of claim 8 further comprising, associating a separate intensity value with each of the input pixels (column 2, lines 30-42). McKeown discloses color values for each of the input pixels that are considered intensity values.

With regard to claim 12, McKeown discloses the method of claim 11 further comprising, assigning a horizontal scale and a vertical scale with each separate scale (column 2, lines 43-50). McKeown discloses scale factors for both x and y directions.

With regard to claim 15, McKeown discloses the method of claim 8, wherein the steps are performed by a processing set of executable instructions residing on a computer readable medium with a single operational pass of the input pixels (column 8, lines 3-9).

With regard to claim 16, McKeown discloses the method of claim 8, further comprising displaying the output lattice on a display (column 7, lines 60-67 and Fig. 10). McKeown discloses an output image and a display device is inherent for an image to be output.

With regard to claim 17,McKeown discloses a method to generate a two-dimensional pixel weight, comprising:

acquiring a warped pixel (column 2, lines 39-42);

acquiring a source pixel (column 2, lines 39-42); and

generating a single two-dimensional pixel weight from the warped pixel and the source pixel, thereby permitting a second source pixel to be transformed into a second warped pixel using the single two-dimensional pixel weight (column 2, lines 30-53). McKeown discloses a method where input pixels are warped to form output pixels on different coordinates. It is understood that the warping pixel weight used for one pixel is also used for another pixel.

With regard to claim 18, McKeown discloses a warped image residing in a computer readable medium comprising one or more pixel lattices produced from a single-pass set of executable instructions, wherein each pixel lattice is generated from one or more source pixels and each source pixel is associated with a weight representing a two-dimensional warping scale of each of the source pixels as represented in each pixel lattice (column 2, lines 16-53 and Fig.8). McKeown discloses performing image warping with software using a first image coordinate system and transforming the image to another different image coordinate system or lattice. The pixels are weighted using a warping matrix.

With regard to claim 19, McKeown discloses the warped image of claim 18, wherein the single-pass set of executable instructions includes a call to a warping function operable to assist in producing each dimensional warping scale used in the weight (column 2, lines 16-23 and 43-50). McKeown discloses single pass warping an image and doing so with different dimensional scaling factors.

With regard to claim 20, McKeown discloses the warped image of claim 19, wherein the warping function is linear (column 2, lines 30-50 and Fig. 8). McKeown discloses determining the warping function with a matrix considered to be linear.

With regard to claim 23, McKeown discloses a system to warp a source image, comprising a plurality of input pixels, each input pixel having an intensity value and each input pixel associated with a source image (column 2, lines 30-42). The color values of the pixels are considered intensity values.

McKeown further discloses a warping set of executable instructions operable to process the input pixels producing scaling data (column 2, lines 43-50).

McKeown further discloses a plurality of destination lattices representing warped versions of the input pixels and produced by using the scaling data to assist in generating a single two-dimensional weight for each input pixel, which when combined with each input pixel's intensity value form each of the destination lattices (column 2, lines 30-50 and Fig. 8). McKeown discloses warping the input pixels to an output pixel

coordinate system using scaling data and a warping matrix shown in Figure 8 that weights the pixels using both dimensions.

With regard to claim 24, McKeown discloses the system of claim 23, wherein the plurality of destination lattices form a single destination image representing a warped version of the source image (column 2, lines 30-50 and Fig. 8).

With regard to claim 25 McKeown discloses the system of claim 24, wherein destination images represents at least one of a stretched version of the source image, a compressed version of the source image, and a scaled version of the source image (Figs. 1-8). McKeown discloses scaled, warped, and rotated images.

With regard to claim 26, McKeown discloses the system of claim 23, wherein the two-dimensional weight includes a horizontal weight and a vertical weight (column 2, lines 43-50 and Fig. 8).

With regard to claim 27, McKeown discloses the system of claim 23, wherein the plurality of destination lattices are formed dynamically from the plurality of input pixels (column 2, lines 30-50 and Fig. 8).

With regard to claim 28, McKeown discloses the system of claim 27, wherein the input pixels are processed in a single pass by a processing set of executable

instructions to form the plurality of destination lattices (column 8, lines 3-9). McKeown discloses the operation as a single-pass operation.

With regard to claim 29, McKeown discloses the system of claim 23, wherein the warping set of executable instructions is non-separable for a first dimension and a second dimension associated with the single two-dimensional weight (Fig. 8). McKeown discloses a weighting transformation matrix that uses two dimensions and is considered to be non-separable.

With regard to claim 30, McKeown discloses the system of claim 23, wherein the destination lattices do not require additional filtering on destination pixels associated with each of the destination lattices (column 3, lines 26-50). McKeown discloses how the holes in the destination are filled through a single-pass operation and are not considered to require additional filtering.

With regard to claim 32, McKeown discloses a system to warp an image, comprising a computing device (Fig. 10, elements 304 and 324) and a display device (column 7, lines 60-67 and Fig. 10). McKeown discloses an output image and a display device is inherent for an image to be output.

McKeown further discloses a memory (Fig. 10, element 308).

McKeown further discloses a source image residing in the memory having a plurality of input pixels, each input pixel including an intensity value and each input pixel associated with the source image (column 2, lines 30-42).

McKeown further discloses a warping set of executable instructions operable to execute on one or more processing elements within the computing device to process the input pixels producing scaling data (column 2, lines 43-50).

Mckeown further discloses a plurality of destination lattices displayed on the display device and representing warped versions of the input pixels and produced by using the scaling data to assist in generating a single two-dimensional weight for each input pixel which when combined with each input pixel's intensity value form each of the destination lattices (column 2, lines 30-50 and Fig. 8).

With regard to claim 33, McKeown discloses the system of claim 32, wherein the display device is at least one of a printer, a monitor, a television, a video camera, and a camera (column 7, lines 60-67 and Fig. 10). McKeown discloses an output image and a display device is inherent for an image to be output.

With regard to claim 34, McKeown discloses the system of claim 32, wherein the memory is at least one of a volatile storage and a non-volatile storage (Fig. 10, element 308).

With regard to claim 35, McKeown discloses the system of claim 32, wherein the warping set of executable instructions is separable or non separable (Fig. 8). McKeown discloses a weighting transformation matrix that uses two dimensions and is considered to be non-separable.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 13, 14, 22 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,670,965 to McKeown.

With regard to claim 13, McKeown discloses the method of claim 12, wherein the associated intensity value is fixed point (column 2, lines 30-50). McKeown discloses that the color values or intensity values as a number and fixed point is simply a way to represent a number and has certain advantages in performing calculations in software for example. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to use the fixed point representation of the number because of

properties that make the use or manipulation of that number more advantageous to performing calculations in for example software applications.

With regard to claim 14, McKeown discloses the method of claim 12, wherein the associated intensity value is floating point (column 2, lines 30-50). McKeown discloses that the color values or intensity values as a number and floating point is simply a way to represent a number and the discussion of claim 13 applies.

With regard to claim 22, McKeown discloses the warped image of claim 19, but does not disclose wherein the warped image is embodied within a video stream. However the Examiner takes official notice that it is well known in the art to perform image processing on images from a video stream in order to enhance those images. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to perform the image warping of McKeown on an image from a source such as a video stream in order to enhance images from a video stream.

With regard to claim 31, McKeown discloses the system of claim 23, but does not disclose wherein the system is used in connection with a video device or a security surveillance device. However the Examiner takes official notice that it is well known in the art to perform image processing on images in connection with a video device in order to enhance the images from the video device. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to use the image

warping of McKeown in connection with a video device in order to enhance images from the video device.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,670,965 to McKeown in view of applicants admitted prior art.

With regard to claim 21, McKeown discloses the warped image of claim 19, but does not explicitly disclose wherein the warping function is non-linear, however as the background of the Applicants specification points out on Page 2 in the bottom paragraph "Warping techniques are well known to those skilled in the art, and a variety of linear and non-linear techniques are widely available." The specification also teaches on page 3, second paragraph that "many of the most reliable non-linear warping techniques are produced independent of the process of mapping input pixels. Accordingly, these techniques often produce a mapping for a pixel in two dimensions." Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to use a non-linear warping technique well known in the art in order to map the pixels in two-dimensions in conjunction with the warped image of McKeown.

### *Claim Rejections - 35 USC § 101*

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 18-22 are rejected under 35 U.S.C. 101 because the claimed subject matter is directed to non-statutory subject matter. Claims 18-22 are directed to an image residing in a computer readable medium. This is considered non-functional descriptive material.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wes Tucker whose telephone number is 703-305-6700. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703)308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wes Tucker

11-3-04

Jon Chang
Primary Examiner